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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Office of the Administrator
Washington, D. C.

REPORT AND RECOMMENDATIONS
of the
HUMAN NUTRITION AND CONSUMER USE RESEARCH ADVISORY COMMITTEE
Developed at its First Meeting
December 2-4, 1963
Washington, D. C.

HUMAN NUTRITION AND CONSUMER USE RESEARCH ADVISORY COMMITTEE

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FEB 2 - 1965

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Additional copies of this report may be requested from David J. Ward, Executive Secretary, Human Nutrition and Consumer Use Research Advisory Committee, Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.

PREFACE

The objectives of nutrition and consumer use research to (1) analyze consumer needs and problems, (2) determine utility and economy of goods, (3) measure levels of living, and (4) evaluate results and develop guides for maximum well-being, are designed to meet the responsibility of the United States Department of Agriculture for the production of enough food and fiber and in the proper assortment for the well being of the Nation's citizens.

In preparation for this report the Committee has reviewed the progress reports and the plans for future research for the Agricultural Research Service Divisions that conduct human nutrition and consumer use research and commends the members of the staff for their achievements of the past year and their excellent plans for pertinent research for the coming year.

Dr. B. T. Shaw, Administrator, Agricultural Research Service (ARS), is Acting Chairman of the Committee; Dr. Ruth Leverton, Assistant Administrator, ARS, is Vice-Chairman.

Committee member Dr. Betty Watts was unable to attend the meeting.

COMMENTS AND RECOMMENDATIONS

General

The Committee in reviewing the nutrition and consumer use research is impressed with the continued progress of the program. There has been a steady development of basic information of special value to home and family living and to those concerned with production, distribution, and utilization of agricultural products, and related services and resources. However, the expanding population, rapid changes in patterns of consumer expenditure, population mobility, and changes in the American standards of living demand an expansion of staff and funds in order to analyze and meet consumer needs and further economic growth.

The loss of professional staff is noted with concern in view of the need to maintain the existing programs and to meet the demands of more extensive programs.

The favorable reception by Congress of the proposed program for expanding research in food and nutrition submitted last year is noted with pleasure. The Committee considers it significant that the report was deemed so important that it was printed for public distribution as Senate Document No. 35. It is strongly urged that the necessary action be taken during the coming year to implement this very fundamental, long-term program.

The Committee expresses its extreme concern at the deletion by the Congress of funds for the nationwide food consumption survey. Material from such studies is used by all levels of government, by the business community, and by non-profit agencies. It is vigorously recommended that funds be provided so that this program can be continued and the continuity of the food consumption data of the population will be assured.

There are approximately 50 known nutrients or substances in foods that are of nutritional importance. Therefore, the analysis of foods (for nutrients not presently included in Agriculture Handbook No. 8) and the compilation of food values requires constant attention and continued support, with adequate consideration to the need for additional equipment required for some of the newly-developed sophisticated methods of analysis. Since there are a large number of important food nutrients not included in revised Handbook No. 8, the Committee recommends that priority be given to the early expansion of the food analysis program and the compilation and publication of these additional data.

The Committee reiterates the concern of previous advisory committees that current essential data are not available to the users merely because of procedures for processing. It is urged that the necessary action be taken to narrow the time gap between the compilation of data and its release in printed form. In previous years, the Committee has urged the publication of the completed revision of Handbook No. 8, (Composition of Foods - Raw, Processed and Prepared) and is dismayed that it has not yet been published. This revised handbook which includes data for calories, protein, 5 minerals, and 5 vitamins of over 2000 food items should be published

without further delay.

The Department has had commendable flexibility in program development. Along with the consideration of problems of long-standing concern, the Committee is particularly appreciative of rapid direction of attention to those areas which may be classified essentially as "emergency" in nature, such as the possibility of transmission of pathogenic organisms in laundry and other household operational procedures, pesticide residues in foods, and acute problems of certain population groups, viz., the physically handicapped, migratory families, low-income, indigent, and aged.

The Department is commended for expanded areas of consumer use research. However, consideration should be given to more man years in the areas other than food. The Committee concurs with the Consumer Advisory Council in its support for extended research upon which to base family budget information. The Department is urged to take leadership in an interdisciplinary and interdepartmental approach toward making the vast agricultural product available for improving the physical fitness and health of our population and upgrading the standard of living of disadvantaged segments.

The program of the Rural Area Development should be enlarged to be available to both urban and rural population groups.

The Committee is particularly appreciative of the increasing amount of emphasis being placed upon the dissemination of research findings through publications (ranging from technical presentations of data to popular materials and mass media communications) astutely directed to various groups.

Cognizance is given to the need for developing a judicious balance in identifying unique contributions of the Department in both research and public education programs. It is well recognized that in these areas, there are certain activities which can only and/or best be fulfilled by the Department for the Nation and that a continual sifting of needs of the population is necessary to determine how the resources of the Department may best be utilized to meet those special contributions which only the Department may competently perform.

The Committee recommends that consideration be given to the addition of research staff specifically skilled in the communications area. Such staff should have sufficient subject matter background to be able to work with the varied professional personnel of the Department toward the most effective dissemination of research findings.

It is noted with pleasure that, in keeping with the responsibilities for world leadership of the Department, twelve nutrition research projects have been initiated and implemented in six countries under P.L. 480 sponsorship, with the possibility of six additional projects. Such research in nutrition, not only provides direct usable information to the country where the research is being done, but also fundamental information

may become available which may be invaluable in providing depth for research within the U.S.D.A. It is recommended that at least one staff member be assigned for the specific function of coordinating and developing international programs.

The Committee has noted with gratification the funds for planning increased facilities and the appropriations for the National Agricultural Library.

Functions and Metabolism of Nutrients

Knowledge of nutrient requirements of population groups is essential to the development of recommendations for the production and utilization of foods. Little information is available as to the functions and metabolism of many of the nutrients known to be required for life processes. Because long-range studies with human beings are expensive and are difficult to control and maintain in terms of many influencing factors, research with small animals and microorganisms has provided much useful information on long-term (life span) nutritional interrelationships and physiological processes. Of particular import have been the U.S.D.A. studies concerned with the physiological response of laboratory animals and microorganisms to certain dietary sources of lipids, cholesterol, carbohydrates, proteins, and vitamins. Of special value are the comprehensive aspects of the studies in which interrelationships of responses are concurrently obtained.

The Committee commends the multi-disciplinary approach to the problems at hand including, most recently, histochemical and isotope tracer studies to characterize the nature and sites of stress in physiological response to diet. The Committee also commends the Human Nutrition Research Division for prompt and efficient dissemination of research information. The progress in the program of research of the Pioneering Laboratory in Cellular Metabolism is gratifying and a substantiation of the intent and purpose of this laboratory for basic research.

The Committee recommends further expansion of the current program to emphasize continuing and new investigations of nutrient function and metabolism in relation to the nature of the aging process; hereditary and hormonal influences; diet, obesity and survival rate; and inter-relationships of these factors.

Human Metabolism and Requirements for Nutrients

Although a major part of the research on human metabolism and requirements for nutrients is done in non-government laboratories, the staff in nutrition and consumer use research is engaged in basic research in this area and, through its extra-mural program, serves in a consultant capacity in the contract research being done in various non-government laboratories. The staff is commended for its continued emphasis on methodology and on basic research in this area. The Committee strongly supports research to determine human requirements for minerals and the interrelationships between minerals and the absorption and metabolism of the various nutrients. Of equal importance is research on nutrient

requirements of pre-adolescent and adolescent age groups, since no other research agency is focusing attention on investigations pertaining to the nutrient needs of children of this critical stage of rapid growth and development.

Food Properties Related to Quality and Consumer Use

New food products and new forms of ingredients are being developed at an ever increasing rate by industry through the application of advances in food science and technology. Prompt and objective evaluation of these products, to the end that both home and institutional users may be given guidance in their proper use and handling, is an important part of the consumer use research program of the U.S.D.A. Therefore, it is recommended that this aspect of the program be expanded.

The relative proportion of time and funds spent on each of the various commodity groups appears appropriate in recognition of the number and diversity of problems to be studied.

The Committee commends the practice of augmenting laboratory studies of the factors related to quality with consumer surveys to determine practical significance of laboratory findings. It is recommended that to the maximum extent possible, objective measures of food quality be developed after carefully conducted studies correlating physio-chemical (or other methods) measurements with consumer evaluation of foods.

The program of cooperative research to determine the effect of pesticides on food quality which has been conducted for 12 years should be continued. In addition, it is recommended that this program be expanded to include studies of the effect of additives on food quality and nutritional values.

Additional funds and staff should be made available for research on the quality characteristics of meats and poultry as well as for fruits and vegetables.

The Department is commended on the approach followed in this food quality and consumer use program of combining food science and consumer evaluation effectively.

Nutrient Values of Food

The resources of the Human Nutrition Research Division for the development of authoritative data concerning food composition are historically unique. Potentialities for continued leadership are being realized through a vigorous program. The Committee emphasizes the need for continuing leadership in providing accurate data for use in governmental, academic, defense, and other research, teaching and consumer oriented agencies - for use in planning food production and distribution, developing research-based educational materials to help in dietary planning and food selection, and as a research tool in many areas.

In view of the fact that this Division has the only research unit in the country that is set up for multiple nutrient analyses of foods, it is recommended that high priority be given to the development of information on the nutritional value of foods. Because the mechanics of the nutrient spectra can be simplified, emphasis should be placed on developing methodology.

The Committee highly commends the Division for accomplishments to-date. It recommends that future projects include studies on the various forms in which nutrients appear and factors which have recently been proved significant in human metabolism - such as certain trace elements intimately involved in enzyme and other biological systems.

Tables of Food Composition

The not-yet published revision of Handbook No. 8 will include many more foods than the earlier edition. It promises to be an invaluable resource for nutritionists, research workers, educators, and others working with dietaries. The data in tables of food composition are important for (1) appraisal of diets and food supplies, (2) background for many different types of research in foods and nutrition, (3) developing educational materials, (4) helping in dietary planning and food selection, (5) use in production planning for this and other countries, (6) developing programs of food distribution, and (7) in formulating regulatory programs.

These tables provide in one place valuable information that cannot be obtained from any other source. Only the incomparable data sources of the U.S.D.A. and the professional competence of the staff preparing this publication make it possible. Within the U.S.D.A., continuity has been maintained in the development of the tables which makes them a resource of inestimable value. It is indeed unfortunate that the latest revision of Handbook No. 8 has been so long in process of publication after completion of the manuscript. Immediate publication of revised Handbook No. 8 must be expedited.

A revision of the table on amino acid content of foods and the compilation and evaluation of data on fatty acids, all of which will be used by many agencies, e.g., health, defense, industrial, and related research agencies, should be prepared and published promptly.

The Consumer and Food Economics Division is to be commended for its provision of information essential to the welfare of the total population.

Food Consumption and Diet Appraisal

The Department is uniquely qualified to conduct studies of the consumption of food in the U. S. by population groups and individuals. Results of such studies have implications for all concerned with production, distribution, utilization, and educational programs. No other organization exists to discharge this important national responsibility. It is with considerable regret that the Committee noted the current delay in

the series of studies at 10-year intervals. It is imperative that plans for the 1965 national food consumption survey be implemented immediately at a top priority level and that time and consideration be given to the further development of small-scale special-purpose surveys to be incorporated with the 1975 national food consumption survey.

Information obtained from these continuing studies is vital to the structuring of meaningful diet improvement programs by many government and private agencies, food-related industries and educators. Food consumption data are used for administrative decisions, policy formations, appraising diet status of our population, expanding the agricultural product, assuring the health of the family, cost of living data and for development of family budgets, to describe but a few uses. There is a need for facts regarding the dietary practices of different regions, urban and rural areas, age-sex groups, and socio-economic groups. It is hoped that information can be obtained on both home and away-from-home eating patterns.

A manual summarizing methods of conducting household dietary studies should be of real value to leaders who wish to conduct special local or regional surveys.

Studies to discover the varied factors that affect food practices are urgently needed. Such research is essential for devising programs which will bring about diet improvement. Motivational forces need to be explored in order to help close the gap between what is known and what is practiced. The Committee endorses the Department's plan to make such studies interdisciplinary involving psychologists, anthropologists, and sociologists as well as nutritionists, educators, and home economists.

Concerted efforts need to continue in making dietary guidance materials available to consumers. This has been done well through publications, mass communication, and personal presentations and consultations by staff members. While the importance of dissemination through publication is recognized, the potential of having members of this department serve as leavening agents for others to help in the dissemination of information is also considered important.

The Committee wishes to make the following recommendations for staff consideration:

- (1) Conduct an evaluation to determine the amount and kinds of use being made of both the technical- and popular-type bulletins and visual aids. At the same time, evidence of unmet needs might be determined.
- (2) Give special attention to the attractiveness and appeal of the popular-type bulletins, especially the covers. Whenever possible and within budget limitations, use color.
- (3) Strengthen the sharing of information with inter-departmental groups.

- (4) Continue investigating ways to reach the public through mass communication channels. Television presentations appear to be worthy of further consideration.

Clothing, Household Textiles, and Fabrics for Consumer Use

It would seem reasonable to assume that fundamental studies of the elasticity of knitted fabrics of the several types of fibers now in the program would be partly supported by industry. This should be true of any fiber or fibers struggling for a market in knitted garments. One phase of this study, the effect of household dryers on garment shrinkage, is definitely a matter of U.S.D.A. research interest.

The growth of stretch fabrics has introduced garment construction problems in the home and school sewing; thus, seams and other construction features deserve increased research emphasis.

The Committee enthusiastically approves the resumption of the study on children's foot sizes and the preparation of data on this subject for the guidance of manufacturers and consumers. It urges that the necessary anthropometric studies on children's foot sizes for the better fitting of shoe sizes be carried out.

The armed forces, mail order companies and other large buyers of clothing have done much work on garment sizes using findings from anthropometric and other studies. Conclusions as to the adequacy of these size designations, measurements and tolerances should precede any new research on garment failure and wearer discomfort or fatigue due to existing tolerances. It may be that such a survey will indicate the need for research into the suitability of such new fabric structures as the stretch fabrics on one extreme and the non-woven textiles on the other in some types of garments.

Research aimed toward setting up criteria for the performance of cotton textiles in a wide variety of end-use products is a part of the research responsibility of the Department. To a degree, also, this is a part of the responsibility of technologists in aiding the disposal of surplus cotton.

Research to identify clothing problems and needs of both normal and handicapped children should be resumed as soon as feasible. Principles developed from this research should be incorporated in designs for appropriate clothing.

Household Maintenance of Textile Products

Attention should be given to the evaluation of the effects on fabrics of the increasing number of types of organic bleaches, fluorescent whiteners, and other laundry aids when used individually in waters of different degrees of hardness and in combination with each other.

Research should be undertaken in cooperation with the Public Health Service on the contamination of fabrics by micro-organisms in garments when in use or during washing or dry-cleaning both commercially and in coin operated machines.

All published materials dealing with the airborne transmission of microorganisms in closed spaces such as hospitals and other institutions and in animal quarters should be gathered together. With increased use of recirculated air in offices and homes as well as public meeting places, a thorough investigation of this aerobiology problem must be made for better sanitation. The research study should consider the perils from viruses and bacteria in various parts of the United States. Factors to be studied are family size, cleanliness of the home, humidity, and similar influences.

Household Equipment

The Committee endorses the research done over the years on performance requirements of household appliances and equipment. In the investigation of appliances for floor care, it is also suggested that consideration be given to slipperiness. Consideration needs also to be given to factors related to the safe and efficient design of household equipment for human use, particularly with respect to the needs of elderly and handicapped users. This information should be made available to consumers and manufacturers.

It is recommended that increased funds be made available to establish criteria related to the adequacy of performance (from the consumer viewpoint) of all types of household appliances. Special attention should be given to safety and ease of operation.

The consumer needs simple, factual, and up-to-date information on how to select and use equipment for the home. Objective guides based on technical and research data should set standards for the consumer. This research should be a continuing program so that the publications resulting from the research are kept up-to-date.

Rural Dwellings and Household Operations

Additional research in low-cost housing for segments of the population in critical need including low-income families, the elderly, migratory workers, tenant workers, etc. is highly endorsed. With each of these groups there is need for research based guidelines (minimum) from the standpoint of economy, health, safety, convenience, comfort, etc.

In this same connection, research on the housing requirements of low-income families should be initiated on a broad basis which would involve bringing together data on physical, psychological and socio-economic aspects of the low-income families. Such results could possibly aid in the solution of housing problems in all communities.

It is recommended that financial support be increased so that the present engineering research and architectural design program may be strengthened and expanded to more adequately meet the needs in materials, construction requirements, and plan developments.

Family Economics

The Committee commends and endorses the continuing program of family living surveys and the coordination of the rural and urban expenditure studies. Such studies are essential in appraising the economic condition of our population. The family expenditure and consumption studies of low income families in all areas of the country need strengthening and expansion. The potential use of the vast agricultural product can only be determined by analyzing all consumer needs. Those segments of the population and family life cycle of population groups (aged), should receive particular documentation.

There continues to remain wide gaps in our knowledge of consumer expenditures. The Committee repeats previous recommendations for the inventory data for clothing and house furnishings. For evaluation and analyzing the economic status of our population, family budgetary needs based on economic, sociological and physiological needs of our population must be described and established. Budgets, as developed by this Department, are available only for food.

